36. The EPOR analog protein according to claim 35 wherein the protein comprises SEQ ID NO: 37.

C 2 cont'd

37. A receptor analog protein comprising an amino acid sequence that has at least 10 to 24 amino acid substitutions as compared to the corresponding wild-type receptor protein, wherein said receptor analog protein binds a natural ligand for said naturally occurring wild-type receptor protein at the same or higher affinity than said naturally occurring wild-type protein.

REMARKS

Claims 1-19 have been cancelled. Newly added claims 20-37 are pending. Support for new claim 20 is found at page 29, lines 19-26. Support for new claims 21-22 is found at page 30, lines 13-27 and page 31, lines 3-8. Support for new claim 23 is found at page 30, line 27 through page 31, line 2. Support for new claim 24 is found in Figures 8A-D. Support for new claim 25 is found at page 30, line 27 through page 31, line 2 and page 31, lines 9-14. Support for new claim 26 is found in Figures 8A-D. Support for new claim 27 is found at page 31, lines 15-19. Support for new claim 28 is found in Figure 8D. Support for new claim 29 is found at page 31, lines 20-24. Support for new claim 30 is found in Figure 8A. Support for new claims 31-32 is found on page 31, lines 25-29, and Figures 8A-D. Support for new claim 33 is found at page 66, lines 11-13 and Figures 8A-D. Support for new claims 34-35 is found at page 32, lines 5-31. Support for new claim 36 is found at page 66, lines 5-8 and Figures 8A-D. Support for new claim 37 is found at page 9, lines 15-31, at page 10, lines 19-30 and original claim 11. An Appendix of Pending Claims is attached for the Examiner's convenience.

Rejection under 35 U.S.C. § 102(e)

Claims 1-4, 6-9 and 11-19 are rejected under 35 U.S.C. § 102(e) as being anticipated by Stahl, et al. U.S. Patent No. 5,844,099. Claims 1-4, 6-9, and 11-19 have been cancelled, thus obviating the rejection.

Claims 1-4, 6-12 and 17-19 are rejected under 35 U.S.C. § 102(e) as being anticipated by Jin et al., U.S. Patent No. 6,093,547. Claims 1-4, 6-12 and 17-19 have been cancelled, thus obviating the rejection.

Claims 1-4, 6-12, 18 and 19 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ichijo et al., U.S. Patent No. 5,968,752. Claims 1-4, 6-12, 18 and 19 have been cancelled, thus obviating the rejection.

Applicants respectfully request withdrawal of the rejections under 102(e).

Rejection under 35 U.S.C. § 103(a)

Claims 1-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stahl et al., Jin et al., and Ichijo et al as applied to claims 1-4 and 6-19 above and further in view of Ochoa et al. Claims 1-19 have been cancelled, thus obviating the rejection.

Applicants respectfully request withdrawal of the rejections under 103(a).

Sequence Listing

The specification has been amended to correct an error in the Sequence Listing as originally filed. Entry of this amendment is respectfully requested. The amendments are made in adherence with 37 C.F.R. § 1.821-1.825. This amendment is accompanied by a floppy disk containing the above named sequence listing, SEQUENCE ID NUMBERS 1-37, in computer readable form, substitutes sheet for pages 1 and 34 of the paper copy of

the sequence information. The computer readable sequence listing was prepared through use of the software program "PatentIn" provided by the PTO. The information contained in the computer readable disk is identical to that of the paper copy as amended. The substitute sheets are provided to comply with the sequence rules and contains no new matter. Applicant submits that this amendment, the accompanying computer readable sequence listing, and the paper copy thereof serve to place this application in a condition of adherence to the rules 37 C.F.R. § 1.821-1.825.

Attached hereto is a marked-up version of the changes made to the specification and claims by this Amendment. The attached page is captioned **"Version with markings to show changes made."**

Applicants submit that the claims are now in condition for allowance and early notification to that effect is respectfully requested. Please direct any calls in connection with this application to the undersigned at (415) 781-1989.

Dated: 3/7/02

Respectfully submitted,

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"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

In the Specification

The paragraph beginning at line 5 of page 6 has been amended as follow:

> The designed EPOR analog is linked by a GGGGS (SEQ ID NO:35) linker sequence to a PDA designed coiled-coil sequence (RMEKLEQKVKELLRKNERLEEEVERLKQLVGER (SEQ ID NO:31), based on the GCN4 structure. For example: 1ebp_d12_GCN4 (SEQ ID NO: 37; see also Example 3) is composed of 1ebp_d12 (SEQ ID NO:6) (1ebp_d1 (SEQ ID NO:4) add 1ebp_d2 (SEQ ID NO:5) mutants together), plus GGGGS (SEQ ID NO:35), plus designed GCN4 sequence.

In the Claims:

Claims 1-19 have been cancelled.

Appendix of Pending Claims

20. An erythropoietin receptor (EPOR) analog protein comprising an amino acid sequence that has at least one amino acid substitution as compared to the wild-type EPOR sequence, wherein said substitutions are selected from amino acids residues comprising one or more of the following regions:

a) the inter-monomer interface;

b) domain D1;

c) domain D2;

d) the conserved WSXWS box (SEQ ID NO:30); and

e) the N-terminal helix.

21. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said inter-monomer interface, said substitutions comprising amino acid residues at positions 155, 175 and 178. of what seq # ?

22. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said inter-monomer interface, said substitutions comprising amino acid residues at positions 133 and 135.

23. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said domain D1, said substitutions comprising amino acid residues at positions 40, 53, 55, 57, 69,79,81,85, 96, 98, 100, and 109.

24. The EPOR analog protein according to claim 23 wherein said substitutions are selected from the group of substitutions consisting of W40F, W40Y, Y53F, F55I, Y57F, L69I, V79I, L96F, V100L, and Y109F.

25. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said domain D2, said substitutions comprising amino acid residues at positions 120, 121, 127, 129, 138, 140, 142, 156, 158, 160, 174, 183, 192, 194, 196, 198, 207, and 218.

26. The EPOR analog protein according to claim 25 wherein said substitutions are selected from the group of substitutions consisting of L127I, A129V, V138I, L140I, Y156F, Y156W, V158L, V158I, V160I, I174L, Y192I, Y192F, F194I, F194V, F194L, G207W, G207I, G207M, F208I, F208Y, F208E, L218F, and L218I.

27. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said WSXWS box (SEQ ID NO:30), said substitutions comprising amino acid residues at positions 209, 210, 211, 212, and 213.

28. The EPOR analog protein according to claim 27 wherein said substitution is A211Y.

29. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said N-terminal helix region, said substitutions comprising amino acid residues at positions 11, 15, 17, 18, 19, 29, 37, and 39.

30. The EPOR analog protein according to claim 29 wherein said substitutions are selected from the group of substitutions consisting of K11L, K11W, K11Y, K11A, K11Q, A15L, A15Y, A15M, A15S, A15R, L17F, L17Y, L17I, L17W, L17M, L17K, L18Y, L18N, A19W, A19V, A19Y, A19D, F29L, F29Y, F29R, C37I, C37L, C37E, C37Q, and C37E.

31. The EPOR analog protein according to claim 20 comprising at least one amino acid substitution from said domain D1 and said domain D2, said substitutions comprising amino acid residues at positions 40, 53, 55, 57, 69,79,81,85, 96, 98, 100, 109, 127, 129, 138, 140, 142, 156, 158, 160, 174, 183, 192, 194, 196, 198, 207, and 218.

32. The EPOR analog protein according to claim 31 wherein said substitutions are selected from the group of substitutions consisting of W40F, W40Y, Y53F, F55I, Y57F, L69I, V79I, L96F, V100L, Y109F, L127I, A129V, V138I, L140I, Y156F, Y156W, V158L, V158I, V160I, I174L, Y192I, Y192F, F194I, F194V, F194L, G207W, G207I, G207M, F208I, F208Y, F208E, L218F, and L218I.

33. The EPOR analog protein according to claim 32 wherein the protein comprises SEQ ID NO: 6.

34. The EPOR analog protein according to claim 31 further comprising a linker.

35. The EPOR analog protein according to claim 34 further comprising a dimerization motif.

36. The EPOR analog protein according to claim 35 wherein the protein comprises SEQ ID NO: 37.

37. A receptor analog protein comprising an amino acid sequence that has at least 10 to 24 amino acid substitutions as compared to the corresponding wild-type receptor protein, wherein said receptor analog protein binds a natural ligand for said naturally occurring wild-type receptor protein at the same or higher affinity than said naturally occurring wild-type protein.